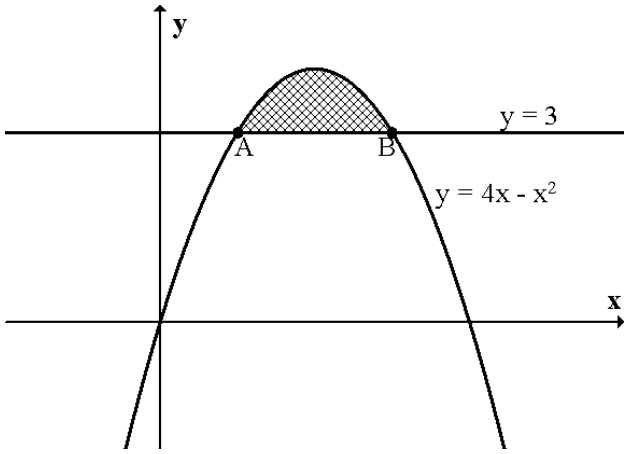
Area Between two Curves

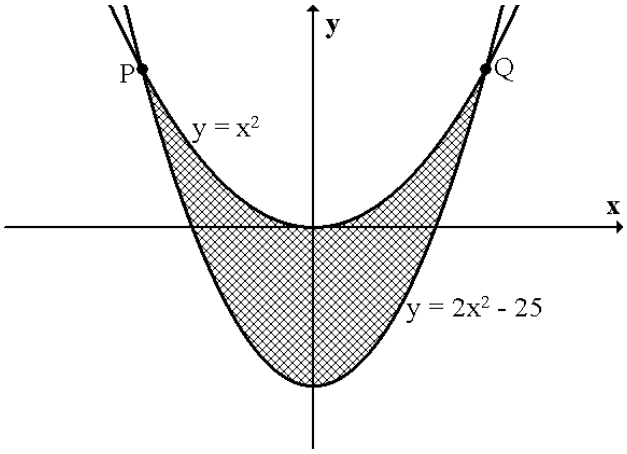
1. The diagram opposite shows the curve $y = 4x - x^2$ and the line $y = 3$.

   (a) Find the coordinates of A and B.
   (b) Calculate the shaded area.



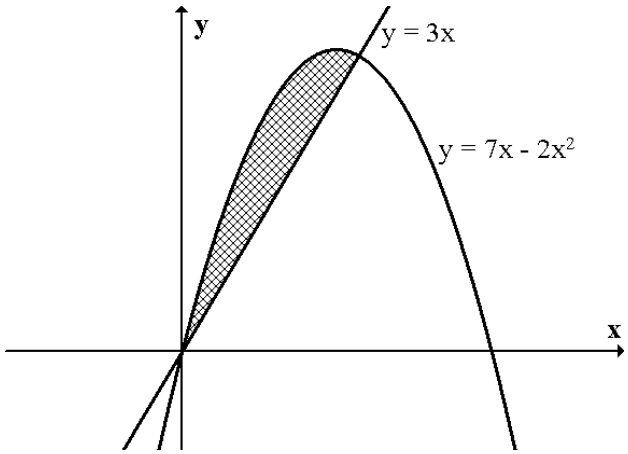
2. The curves with equations $y = x^2$ and $y = 2x^2 - 25$ intersect at P and Q.

   Calculate the area enclosed between the curves.



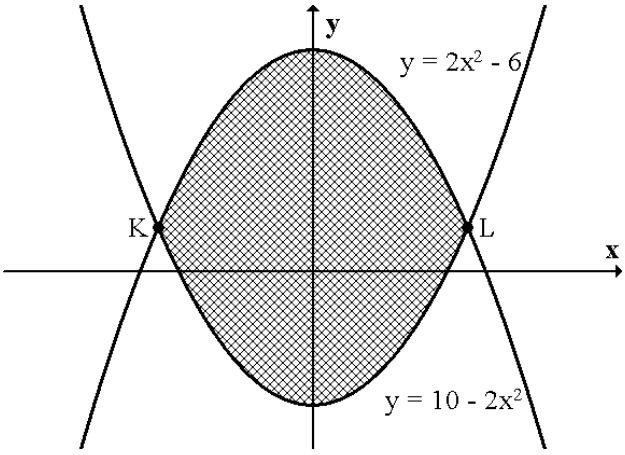
3. The diagram opposite shows the curve $y = 7x - 2x^2$ and the line $y = 3x$.

   Calculate the shaded area.



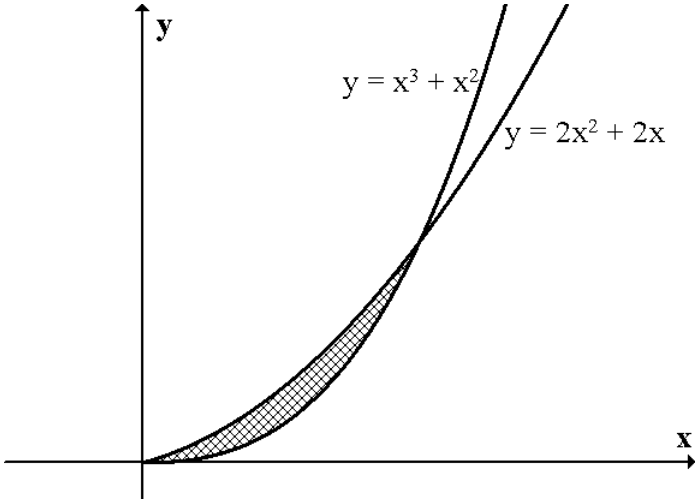
4. The curves with equations $y = 2x^2 - 6$ and $y = 10 - 2x^2$ intersect at K and L.

   Calculate the area enclosed by these two curves.



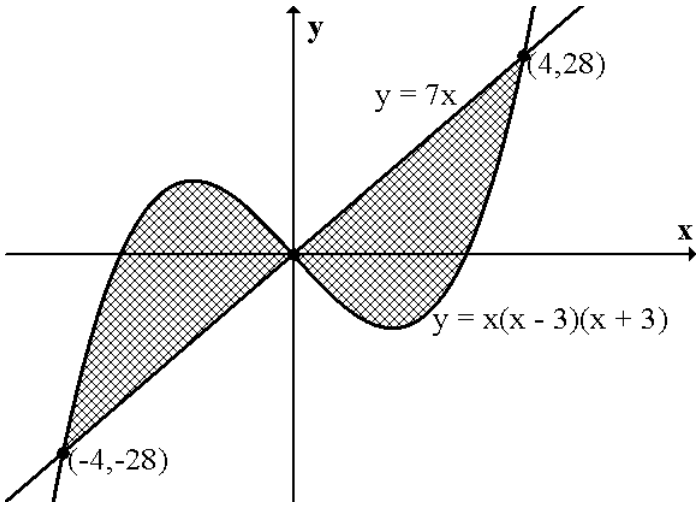
5. The diagram opposite shows part of the curves $y = x^3 + x^2$ and $y = 2x^2 + 2x$.

   Calculate the shaded area.



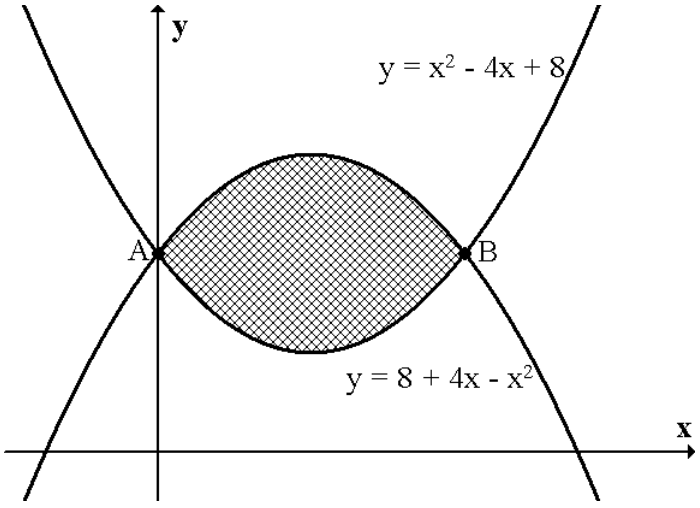
6. The curve $y = x(x – 3)(x + 3)$ and the line $y = 7x$ intersect at the points (0,0), (-4,-28) and (4,28).

   Calculate the area enclosed by the curve and the line.



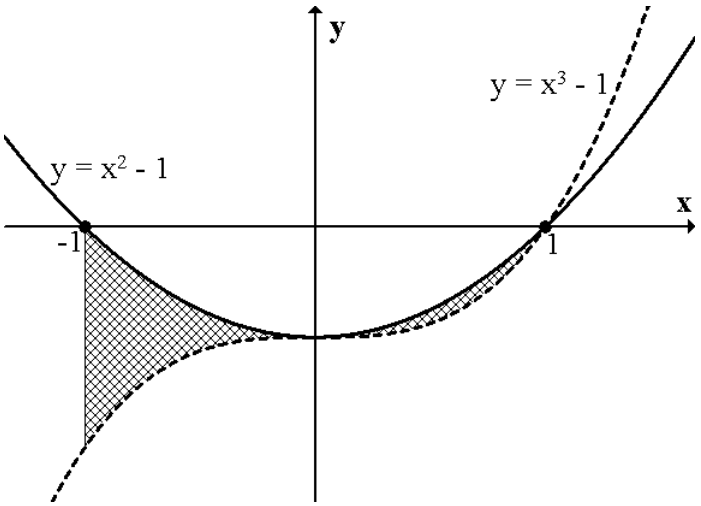
7. The parabolas $y = x^2 – 4x + 8$ and $y = 8 + 4x – x^2$ intersect at A and B.

   (a) Find the coordinates of A and B.
   (b) Calculate the shaded area.



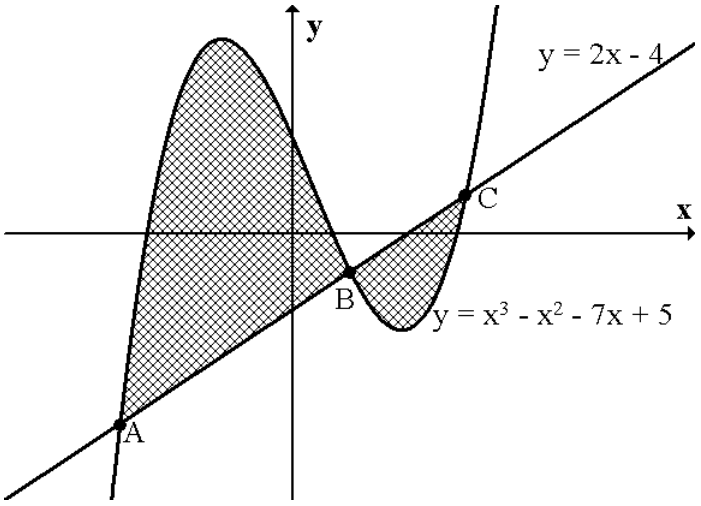
8. The diagram shows parts of the curves $y = x^3 - 1$ and $y = x^2 - 1$.

   Calculate the shaded area.



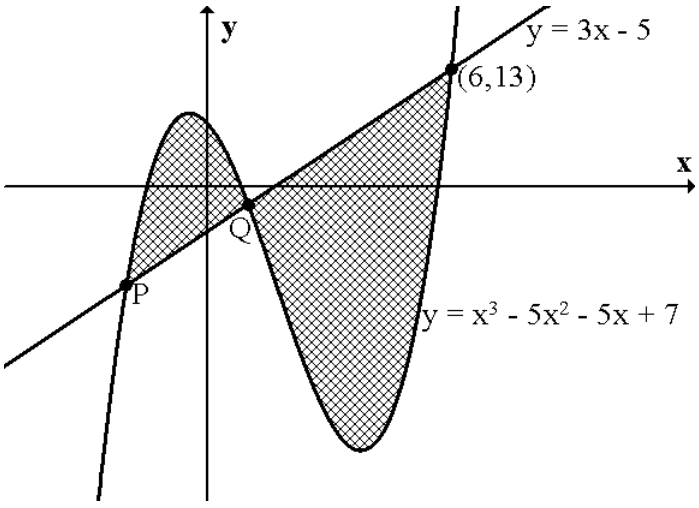
9. The curve $y = x^3 - x^2 - 7x + 5$ and the line $y = 2x - 4$ are shown opposite.

   (a) B has coordinates (1,-2). Find the coordinates of A and C.
   (b) Hence calculate the shaded area.



10. The diagram shows the line $y = 3x - 5$ and the curve $y = x^3 - 5x^2 - 5x + 7$.

    (a) Find the coordinates of P and Q.
    (b) Calculate the shaded area.



11. The diagram opposite shows an area enclosed by 3 curves:

    $y = x(x + 3)$, $y = \frac{4}{x^2}$ and $y = x - \frac{1}{4}x^2$

    (a) P and Q have coordinates (p,4) and (q,1). Find the values of p and q.

    (b) Calculate the shaded area.